SCOPE OF WORK FOR
SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT (DISTRICT)
FLOOD EMERGENCY RESPOSNE GRANT - DELTA ROUND 2
SJCDPW-RFP-22-02

The following scope of work details the implementation of the Delta II grant by San Joaquin County Flood Control and Water Conservation District's (District) Flood Emergency Response Project – Delta Round 2. The following tasks align with the scope of work included in funding agreement no. 4600012430 between the District and the CA Department of Water Resources.

TASK 1 ALERT2 UPGRADES

1.1 Identify ALERT2 Upgrade Locations

A review of existing physical rain and stream monitoring sites and equipment to determine how much, if any, of the legacy gage infrastructure is suitable for upgrading to ALERT2. A reconnaissance review of new rain and stream monitoring sites required to monitor critical flood areas. Critical locations and information needs will be identified, including critical stream stages and desired advanced warning time. Plan and coordinate upgrade to ALERT2.

Task Deliverables

1. Technical memo describing:
    a. Evaluation of existing rain/stream monitoring equipment,
    b. Identified locations for upgraded rain and/or stream gages,
    c. Identified locations for new rain and/or stream gages, and
    d. Additional information needs, if any.

1.2 Procure and Install ALERT2 Upgrades

Under task 1.2, San Joaquin County or its agents will install, and verify operation of up to 8 new and/or upgraded stream gages. Upgraded stream gages will be within the legal Delta.

Task Deliverables

1.2.1 Installation report including pictures of the installed gages, locations, and summary of the testing procedure

TASK 2 CREATION OF INUNDATION MAPS FOR FLOOD WARNING

2.1 Data Collection and Analysis

Interviews of San Joaquin County emergency managers and District personnel to determine priority locations with mapping needs. Locations will be determined based on critical needs for emergency warning, response, and available supporting data. Mapped locations will be within the Legal Delta region. In summary, data collection and analysis will include (i) identifying the information needs for inundation maps (ii) priority locations/ river reaches for inundation mapping, and (iii) list of hydraulic models available

corresponding to each river reach/location for flood inundation mapping.

Task Deliverables

1. Technical memorandum summarizing information needs for inundation maps, priority locations/river reaches for inundation mapping, and a description of the model approach, methods, and hydraulic models used to develop inundation maps

2.2 Review Available Hydraulic Models

A review of available hydraulic models for each identified river reach. A test run will be conducted to check the model stability and suitability for inundation mapping. Once completed, staff or consultants will present model test run findings to District personnel to discuss whether models are suitable for flood inundation area mapping and determine what, if any, model adjustments are needed.

Task Deliverables

2.2.1 Agendas, minutes, and sign-in sheets from review meetings

2.2.2 List of selected hydraulic models corresponding to each river reach identified for inundation mapping

2.3 Scenario-based Hydraulic Models

For each river reach identified, the consultant team will run the hydraulic model with various flood event return periods such as 5, 10, 25, 50, 100, 200 and 500 years to generate the flood inundation area. Leveraging hydraulic models, updated as necessary, the task will develop inundation maps at critical locations and river reaches. Existing hydraulic models developed for the Central Valley Flood Protection Plan (CVFPP) will be utilized. For example, an unsteady HEC-RAS hydraulic model of French Camp Slough (FCS) (located in the Southern portion of the City of Stockton, CA) including Walker Slough (WRS), Duck Creek (DKC), North Littlejohns Creek (NLJ), North Fork South Littlejohns (NSL) and South Fork South Littlejohns Creek (SSL) will be used as necessary to support creation of inundation maps within the Legal Delta.

Unless more up to date data is available, staff or consultants will use a subset of 237 miles of HEC-RAS 1-D stream data in two different FLO-2D grid systems: (i) 155 miles of streams, primarily French Camp Slough (FCS), Mormon Slough (MNS), Fivemile Slough (FVS) and its tributary embedded in 250 ft grid system; and (ii) 82 miles of stream, primarily San Joaquin River (SJR), Tuolumne River (TLR) and Stanislaus River (SSR) embedded in 400 ft grid system. By necessity, the existing overall hydraulic model may extend beyond the Legal Delta boundaries but only river segments within the Legal Delta will be mapped in this project.

Task Deliverables

1. Technical memorandum summarizing hydraulic modeling results

2.3.1 Agendas, minutes, and sign-in sheets from coordination and review meetings (as needed).

2.4 Prepare Inundation Maps
At each location identified under Subtask 3.1, staff or consultants will create inundation maps using hydraulic models of various flow rates or from historical data. A range of stages will be defined.to cover the range of possible flood elevations. A set of 6-10 inundation maps will be developed in different stage increments, through the identified range of potential flooding.

Task Deliverables
2.4.1 For the reaches identified, 6-10 inundation maps, in GIS format, will be provided that reflect a range of possible inundation levels.
2.4.2 GIS files (geodatabase) will be provided to the District.

2.5 Incorporate Inundation Maps into Warning System
The inundation maps will be presented on San Joaquin County's flood warning system website for public access. San Joaquin County's current flood warning system website is found at https://sanjoaquin.onerain.com/ . The inundation maps developed for San Joaquin County will be present on a website similar to the ones found at the following link: http://www.chehalisriverflood.org/.

Task Deliverables:
2.5.1 Operational inundation maps for river reaches integrated into San Joaquin County's existing flood warning system website for public access.
2.5.2 Electronic files, in GIS format, of inundation maps for each mapped location.

2.6 Review and Approval of Inundation Maps

Final presentation of inundation maps and updated website. This will allow for final comment on website functionality.

Task Deliverables:
2.6.1 Agenda, minutes, and sign-in sheets of final website presentation.

TASK 3 INTEGRATE INUNDATION MAPS INTO FLOOD SAFETY PLANS (FSPs)

3.1 Update Emergency Operations Plans (EOPs)
Staff or consultants will conduct one meeting with San Joaquin County emergency managers and San Joaquin County Flood Control and Water Conservation District (District) personnel involved in emergency response to review results of the inundation maps and incorporate findings into the District's existing Emergency Operations Plan – Base Plans (EOPs). Anticipated updates to the EOPs may consist of the following: 1) review and possible update of existing response activation triggers; 2) review and possible update of identified gauges used for monitoring weather conditions; and 3) update situational overview to include better characterization of flood scenarios. The Emergency Operations Plans will remain consistent with regional standards and the Guide to Developing Local Flood Safety Plans and Water Code Section 9561 (AB156).

Task Deliverables:
1. Final Updated District Emergency Operations Plan – Base Plan(s)

3.2 Update Flood Contingency Maps (FCMs)

Once the District's Emergency Operations Plans have been updated, staff or consultants will conduct one in-person meeting with District personnel to update the District's flood contingency map set (FCM). The intent of these meetings is to include findings from inundation maps. Items that will be considered for updates include: 1) post-inundation flood containment and damage reduction options; 2) dewatering plan; and 3) the Response Activations Triggers text box. The FCMs will remain consistent with regional GIS mapping standards being used in eight other counties in the Central Valley in order to preserve the current GIS compatibility and inter-operability.

Task Deliverables:

3.2.1 Updated San Joaquin County Flood Control and Water Conservation District's (District) Flood Contingency Map based on inundation map findings.

3.2.2 All electronic files, including GIS files and metadata.